

REMARKS

By this Amendment, claim 1 is amended merely to clarify the recited subject matter. Claims 1-3, 8, 10-15, 18 and 22-25 are pending.

Claims 1, 3, 15, 22 and 23 were rejected under 35 U.S.C. 103 over Harte et al. (U.S. 3,693,623; hereafter "Harte") in combination with Allemann et al. (hereafter "Allemann"). Claims 1-3 and 8 were rejected under 25 U.S.C. 103 over Harte in combination with Allemann and further in view of Gustafsson (U.S. 5,320,618). Claims 10-15, 24 and 25 were rejected under 35 U.S.C. 103 over Harte, in combination with Allemann and Gustafsson with further reliance on Anderson et al (U.S. 5,735,844) and Optoelectronics.

Applicants traverse the rejections because one of ordinary skill in the art would not have been motivated to combine the teachings of Harte and Allemann in the manner hypothesized by the Office Action. Furthermore, even assuming that the teachings of Harte and Allemann were combined, their teachings, analyzed individually or in combination with the other cited references, fail to teach or suggest all the features recited in the rejected claims.

MOTIVATION TO COMBINE HARTE AND ALLEMANN FAILS TO SUPPORT A PRIMA FACIE CASE OF OBVIOUSNESS

The Office Action's assertion that one of ordinary skill in the art would have been motivated to combine these references ('It would have been obvious to the artisan of ordinary skill to employ the water filter of Allemann et al in the device of Harte et al, since this is an appropriate filter for depilation as it will pass the green and ultraviolet light desired by Harte et al...') is completely insufficient to support a *prima facie* case of obviousness. As a result, the 103 rejections based on Harte and Allemann are traversed for at that reason.

The requisite standard for motivation to combine references requires a showing that one of ordinary skill in the art would have been motivated to combine the references not that they may have combined the references. Under MPEP 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. Primarily, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan

would have found the claimed invention to have been obvious in light of the teachings of the references.” *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

However, the Office Action has merely asserted that one of ordinary skill would have found it obvious to employ the ‘water filter’ of Allemann in the device of Harte, asserting that the water filter is an appropriate filter for depilation because it would allegedly pass the green and ultraviolet light desired by Harte. Such rationale falls far short of the requisite desirability of such a modification. Even assuming for arguments sake that one of ordinary skill in the art would have recognized that the teachings of Allemann and Harte could be combined, there is no teaching or suggest of why those teachings should be combined. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

“The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art.” *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988)

The strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. *In re Sernaker*, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (Fed. Cir. 1983).

However, no such beneficial result would have been produced by their combination for the following reason. Specifically, Harte teaches an optical fibre-type depilation apparatus in which green or UV light is filtered from an output of an arc lamp and is passed to a hair follicle. Green light (if used) is confined to approximately 530 nm wavelength (see the paragraph bridging cols. 3 and 4). The light output is preferably less than 3 ms duration (col. 3, line 22). Harte’s energy flux is approximately 210 J/ cm²/sec, corresponding to about 9.6 (more generally from 5-30) J/ cm² at the outlet end of the fibre optic. Because the energy at the input end of the fibre optic is quoted as from 20 to 100 J/ cm², one may calculate that the energy flux after filtration, but before the optical fibre would be approximately $3210 \times 3 = 10,000$ J/cm²/sec.

Allemann merely teaches an apparatus for treating solid tumors in an experiment conducted on mice in which red light (650-700 nm) is delivered by a Xenon arc lamp

equipped with a 10 cm water filter and high and low cut off filters (LL-650 and LS-700). However, Allemann's energy flux is $200 \text{ mJ/cm}^2/\text{sec}$ (i.e., approximately 50,000 times less than Harte), which provides an energy density on the skin of 400 J/cm^2 . Accordingly, use of such a configuration would require an exposure time of 2000 second (33 minutes).

Accordingly, one of ordinary skill in the art would not have been motivated to combine the configurations of Harte and Allemann. Therefore, the argument that it would be obvious to combine the reference teachings because the water filter would pass green and UV light amounts only to an assertion that the incorporation of such a water filter into the apparatus of Harte would be harmless. One of ordinary skill in the art would have recognized that no benefit or advantage would have resulted from the hypothesized combination. In fact, the water filter would not assist Harte to isolate either the green light output or the UV light output they desire.

Therefore, combining the teachings of Harte and Allemann would have resulted in providing a pointless complication of an already satisfactory system in Harte without any benefit. Moreover, such a combination would have provided difficulties that would have to have been overcome in finding room for the water filter in the apparatus of Harte. As a result, such difficulties would have further dissuaded one of ordinary skill in the art from making such a modification without any perceived benefit. Similarly, incorporating the filter of Allemann would inevitably have increased the cost and time of manufacture of the Harte apparatus, which the skilled artisan would not have been motivated to undertake in the absence of some positive advantage.

Accordingly, the prior art rejections based on Harte and Allemann are traversed as failing to be based on a *prima facie* case of obvious.

Moreover, Applicant submits that the teachings of Harte and Allemann are very different in operation. Harte is directed to a depilation apparatus whilst Allemann is directed to an apparatus for use in the experimental treatment of tumors in mice by photodynamic therapy.

In Harte, the object is to heat the skin surface structures to the point that thermal coagulation of tissue takes place. Accordingly, Harte teaches the use of a pulsed light apparatus with an output duration of less than 3 msec. In Allemann, heating is not an object at all but rather the goal is photo-activation of administered therapeutic chemicals. Accordingly, Allemann teaches use of a continuous light device with a treatment time of half an hour. As a result, the treatment times between Harte and Allemann differ by a factor of

600,000. Whereas Harte uses green light or ultraviolet, Allemann uses red light. Harte provides for illumination of a point sized treatment area, whilst Allemann treats an 8 mm diameter area. The rate of application of energy in Allemann is $200 \text{ mJ/cm}^2/\text{sec}$, whereas in Harte it is $3210 \text{ J/cm}^2/\text{sec}$, differing by a factor of 16,000. The desired energy exposure of the target site in Allemann is 400 J/cm^2 whereas, in Harte, it is $5\text{-}30 \text{ J/cm}^2$.

Accordingly, these very substantial differences in the operation of the two prior art forms of apparatus further refute any logical basis for their hypothesized combination, which is indeed based on improper hindsight. Accordingly, the rejections of the pending claims is traversed and all pending claims are allowable.

**THE HYPOTHEZED COMBINATIONS WOULD NOT TEACH
OR SUGGEST THE FEATURES RECITED IN CLAIM 1**

Furthermore, even assuming that the teachings of Harte and Allemann were combined, their teachings, analyzed individually or in combination with the other cited references, fail to teach or suggest all the features recited in the rejected claims. Even assuming that one of ordinary skill in the art would and could have combined the teachings of Harte and Allemann, the hypothesized modified apparatus would merely be as described in Harte except that it would have an additional 10cm water filter. Thus, it would be an optical fibre type depilation apparatus in which green or UV light is filtered from the output of an arc lamp and is passed to a hair follicle. The green light (if used) would be confined to approximately 530 nm wavelength (paragraph bridging cols. 3 and 4). The light output would preferably be less than 3 ms duration (col. 3, line 22). The energy flux would be approximately $3210 \text{ J/cm}^2/\text{sec}$, corresponding to about 9.6 (more generally from $5\text{-}30 \text{ J/cm}^2$ at the outlet end of the fibre optic). The energy flux after filtration, but before the optical fibre would have to be about $3210 \times 3 = 10,000 \text{ J/cm}^2/\text{sec}$. There would be a water filter playing no apparently useful role and not altering these figures. The water filter would not be removing any wavelengths that would otherwise pass out of the housing to the skin treatment area because any wavelengths it removes would also be candidates for removal by the green or UV pass filter 22.

However, such an apparatus would differ from that now claimed in at least the following respects. First, it would not provide a pulsed output duration of from 10 to 70 msec; rather, it would have an output duration of less than 3 msec. Secondly, it would not have a first filter system component filtering out ultraviolet and near ultraviolet wavelengths but passing the rest of the light output of the lamp. Nothing of that kind is described in either

reference. Furthermore, the water filter would not be positioned so that it would remove wavelengths that would otherwise pass to and heat the skin, rather they would be stopped anyway by the green or ultraviolet pass filter.

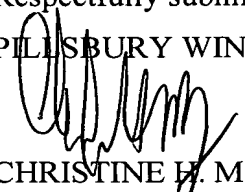
Neither the application of the filtered green or ultraviolet light, as per Harte, or the application of filtered red light, per Allemann, is consistent with the pending claims, which specify the application of the remaining wavelengths following removal of ultraviolet up to 510 nm and those wavelengths absorbed by water.

Accordingly, assuming for arguments sake that Harte and Allemann were combined, their teaching would fail to provide the claimed invention of independent claim 1 and its dependent claims. Accordingly, the rejections of the pending claims is traversed and all pending claims are allowable.

All rejections and objections have been addressed. It is respectfully submitted that the present application is now in condition for allowance, and a notice to that effect is earnestly solicited. Should there be any questions or concerns regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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